

LITTLE (Jas. L.)

Compliments of

Dr. J. I. Little

A LECTURE  
ON  
MEDIAN LITHOTOMY

DELIVERED BEFORE THE  
BROOKLYN ANATOMICAL AND SURGICAL SOCIETY

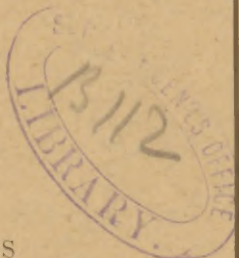
BY

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REPRINTED FROM THE ANNALS OF THE ANATOMICAL AND SURGICAL SOCIETY,  
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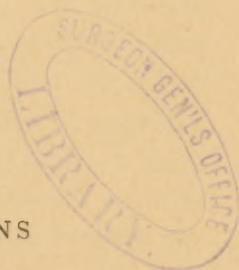
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## MEDIAN LITHOTOMY.\*

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So far back as the earliest times of which we have any knowledge, the cutting operation for stone has been employed. The old Hippocratic oath made those who took it swear that they would never cut for stone, but leave the operation to be performed by those who occupied themselves exclusively with it.

As far as we can learn from history, the operation was performed in olden times in the same manner that it is at present, by the native surgeons of the East. The operation was called cutting on the gripe. The fingers of the left hand were introduced into the rectum, the right hand placed on the hypogastric region; and the stone was forced or pushed down toward the neck of the bladder. Holding it there with the fingers and thumb of the left hand, the operator made a curved incision across the perineum, through the

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\* Delivered before the Society, November 3d, 1879; reported stenographically by Mr. John E. Norcross.

tissues down to the stone, which could usually be felt externally; extracting it with a hook or a pair of forceps. Of course this operation was probably rarely done before the stone had assumed a formidable size so as to be easily felt.

This method of operating continued in vogue until the opening of the 16th century, when the Italian surgeon, Francisco di Romani, introduced the method of cutting into the bladder on a grooved staff, and his pupil, Sanctus Marianus published a treatise in 1535, in which he described the operation which was named after him, the Marian operation. By this method the incision was made in the median line, and in this resembles, in some points, the operation about which I am to speak to you this evening. A grooved staff was introduced into the bladder, and a cut made in the median line until the staff was felt; a probe or similar instrument was conducted by the groove of the staff into the bladder, and the neck of the bladder was dilated with dilators or blunt gorgets until it was sufficiently large to allow of the extraction of the stone.

The fatality after these operations was very great, because the calculi were in many cases allowed to attain a large size before the patient would submit to an operation. Hence great laceration and injury would be done to the neck of the bladder by the removal of the stone. This method of operating continued to be practised until the middle of the last century, when it was superseded by the lateral operation introduced by Mr. Cheselden.

During the present century new and improved methods of removing vesical calculi have been introduced. Lithotomy or lithotripsy was introduced by Civiale in 1834, and recently litholapaxy, by Dr. Bigelow, of Boston. During the same time modifications of the cutting operation or lithotomy have also been made, and among them the median operation, the subject of this evening's talk.

I will not have time to fully discuss the relative merits of the cutting and the crushing operations; I will state, however, that while all surgeons agree that some cases are suitable for lithotomy and others for lithotrity, the number for which the crushing operation is advisable is constantly increasing. The great tolerance of the bladder to the prolonged use of instruments in skilled hands, which has recently been demonstrated in the operation introduced by Dr. Bigelow, has narrowed the field of lithotomy considerably. A great many stones, that we formerly thought necessary to cut for, we now can crush, even if it takes a number of operations lasting several hours at a time. In my estimation there is no operation in surgery, not even excepting that for cataract, which requires more care, skill and practice, than the operation of lithotrity. I think it is far safer for the patient to have the stone removed by lithotomy, than to expose himself to lithotrity performed by unskillful hands.

I agree with Dr. Gouley and Dr. Weir in speaking of litholapaxy, that it is a more difficult operation than lithotrity and, one that should never be undertaken except by a good lithotritist. Although it seems an easy operation the danger is greater, because the patient is under the influence of an anæsthetic and cannot give evidence of injury by the improper manner of handling the lithotrite. Considerable practice on the cadaver should precede any attempt to use the lithotrite on the living subject.

To return to lithotomy: There are two classes of cases that, in my judgment, will be always suitable for the cutting operation; first, patients under fifteen years of age; second, patients who suffer from severe cystitis, and especially those whose stone is the result of the cystitis. With patients under fifteen it is difficult to introduce the instrument; the stone may be as large as any found in adults,



and the difficulty in removing the fragments is so great, that the operation of lithotomy is the best for such patients, unless the stone should be extremely small. Where the stone is found to be not much larger than a pea, and a small lithotrite can be introduced, it is perfectly justifiable, I think, to crush it.

With the second class of cases, patients suffering from severe cystitis with contracted bladders, I think the cutting operation is always preferable. The manipulation of the instrument in the inflamed bladder, where the inflammation is not due to the stone, must of necessity aggravate it. It is possible that a further experience in litholapaxy in such cases may induce a modification of this opinion.

The best operation, in my opinion, for a case of cystitis, where the cystitis precedes the formation of the stone—not where the cystitis is caused by the stone, is the lateral operation; because it cuts through the neck of the bladder, and allows the urine to pass involuntarily through the wound, and thus gives for a time, rest to the bladder. In all cases where I have had this complication, I have in preference resorted to the lateral operation, and not only have relieved the patient from the stone, but also materially improved the cystitis.

In large oxalate of lime calculi, the great hardness of the stone causes difficulty in crushing. If you can ascertain that they are of this character, of course the cutting operation would be the better one. In cases where organic stricture is a complication, or where the patient has symptoms of kidney changes, there will be no hesitation I think in choosing lithotomy. Further experience may favor litholapaxy in these last mentioned cases, especially those complicated with stricture, as this may be divided at the time of the operation. The stone may then be crushed, and all the fragments removed.



A few words with regard to the various methods of cutting for stone. There are three principal operations in vogue at the present time, the lateral, the bilateral, and the median; so named from the line of the external incision. In the lateral operation the incision is made on the left side of the perineum; in the bilateral, it is made across the perineum, and in the median operation it is made in the central line. The lateral and the bilateral, have one feature in common, by which they essentially differ from the median, namely, the neck of the bladder and the prostate gland are divided to a certain extent, while in the median operation the incision extends only through the membranous portion of the urethra, the neck of the bladder being dilated.

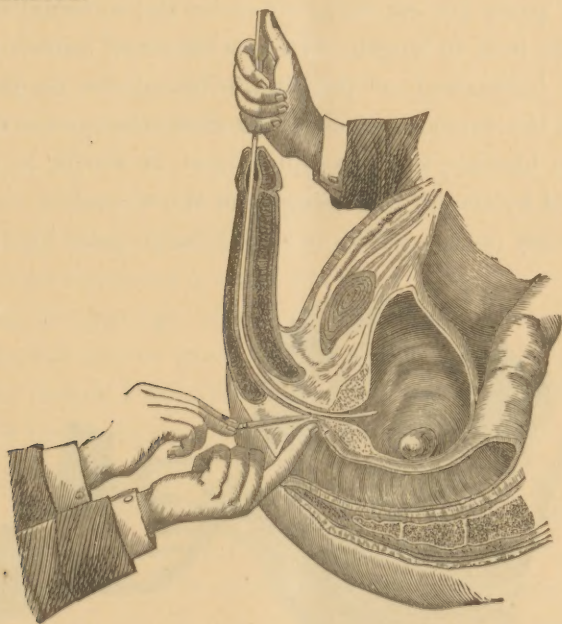


FIG. I.

The median operation was brought into prominence by Mr. Allarton. In 1854, he published a pamphlet entitled,

"Lithotomy Simplified." The operation as described at that time, is the one to which I will now call your attention. It is performed in this way. A staff is introduced into the bladder, and is held by an assistant well up against the pubes, the surgeon then introduces the forefinger of the left hand into the rectum, and rests it against the apex of the prostate gland. A long slender knife is then introduced in the raphé of the perineum from a half to three-quarters of an inch above the anus, with the cutting edge upward, and pushed inward until its point reaches the groove in the staff (Fig. 1), then an incision is made directly upward. The point of the knife incises the urethra to a certain extent, and elevating its handle on its withdrawal, the soft parts are cut so as to make the external incision about an inch in length. Then a director, probe, or any straight instrument of the kind, is introduced on the staff through the wound, and is passed along the groove directly into the bladder, the accomplishment of which, is usually indicated by the urine passing from the wound.

The staff is then withdrawn, and the surgeon holding the

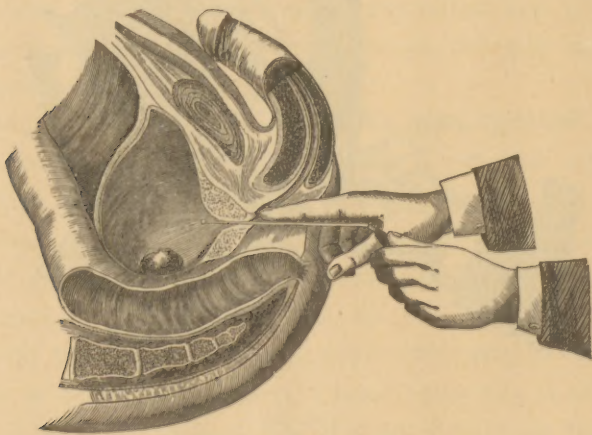


FIG. 2.

director with his left hand, oils the index finger of his right, places it on the director and is guided by it to the neck of the bladder, which he carefully dilates until the finger

enters the bladder and the stone is felt (Fig. 2). Both finger and director are now removed, the forceps introduced, and the stone seized and extracted. If the stone be too large to be removed in this way, we introduce a lithotrite or other instrument for crushing, and seize the stone and break it; then with the forceps or scoop extract the fragments. This constitutes in a few words the median operation.

In performing the median operation, it is necessary to use a certain number of instruments, and to them I will now call your attention. The ordinary staff used for lateral and bilateral lithotomy, is not a good one to use in this operation, because the groove has an abrupt termination, which is very necessary where you perform the lateral or bilateral operation, but for the median operation it is an interference with the passage of the director through that groove into the bladder. For that reason, I have devised a staff which is not open to that objection. It is made with a very deep groove, so that the knife will have but little difficulty in reaching it, and incising

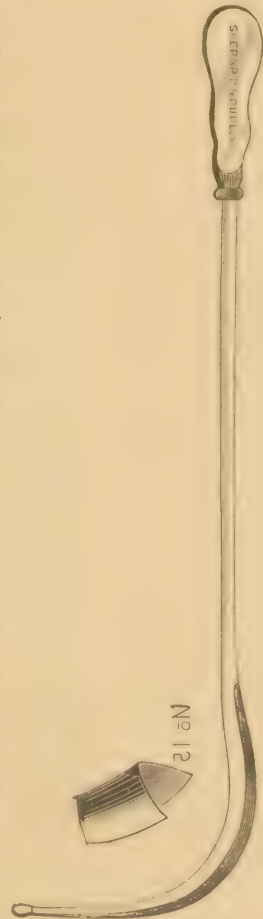


FIG. 3. THE STAFF.

the urethra. There is also no abrupt termination to the groove, so that the director will pass into the bladder without interception. I have adopted the principle, which is taken from the French instruments, having the curve bulge out as much as possible, thus making the staff prominent in the perineum, so as to be easily reached by the knife. The



groove being deep, a greater portion of the knife passes through the urethral wall, thus giving a good purchase on the urethra, so that the knife is sure to cut to the desired extent.

I was led to devise this form of staff with a deep groove, by experiencing some difficulty in one of my earlier operations. The groove of the staff I used at that time being shallow, the point of my knife failed to make a free incision in the urethra. In attempting to introduce my finger into the bladder on the director, the urethra was torn almost completely across, and a stricture followed: The patient was about four years of age. After the operation, a fistula was left in the perineum with a stricture of the urethra in front. External urethrotomy was successfully performed and the patient entirely recovered.

I will now describe the knife. An ordinary finger knife will answer the purpose, but it is much better to have one with a long handle. A straight knife will reach the groove very well, but if you have one with the handle lengthened so as to rest upon the hand between the finger and thumb, you can so much the better direct the knife to the staff. I might say here, this is a part of the operation which is sometimes attended by a little difficulty. In one case I missed the groove, and went in some distance deeper than the staff. I felt anxious about the case but no bad symptoms followed. Now, if I do not feel the groove distinctly, I make an incision in the median line, and as soon as the groove is felt, I puncture, and cut directly upward. This is the knife,



FIG. 4. THE KNIFE.

devised after Mr. Allarton's description (Fig. 4); it has a lancet-shaped point, passes in nicely, and makes a good incision provided it is sharp.

This director (Fig. 5), is another instrument of my own. It is simply a grooved, straight director with the handle bent downward, and with a little button at the extremity, by which it can be guided along the staff into the bladder without any trouble: upon this, dilatation can be easily made with the finger.



FIG. 5. THE DIRECTOR.

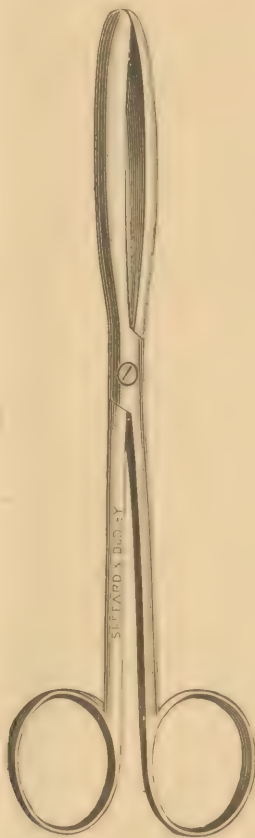


FIG. 6. THE FORCEPS.

The forceps for extracting the stone which I now show you (Fig. 6), are those which I prefer. They are much better than those which dilate the most at their extremities. This kind dilates the opening as the stone is being extracted, while the other form to which I have alluded, is apt to be-

come buttoned behind the neck of the bladder, if the parts are at all rigid. Sometimes you can feel the calculus with your finger, but when you take your finger out and introduce the forceps, you find you cannot seize it. If you can only get your forceps in with your finger, there

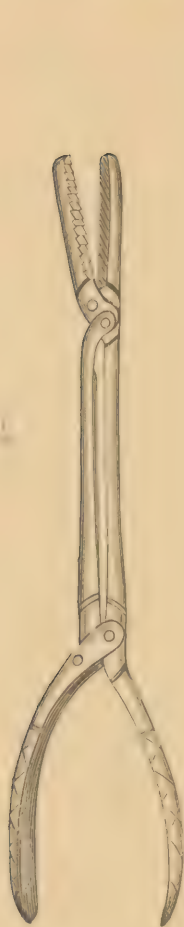


FIG. 7.  
GOULEY'S CRUSHER.



FIG. 9.  
THE SCOOP.



FIG. 8.  
SCREW CRUSHER.

will be no trouble in seizing it. For that reason, I sometimes use the ordinary polypus forceps, with which I have



removed a great many of the smaller calculi. Unless the stone be small, it is safer to introduce the crusher and break it, and then remove the fragments. Thompson's or Bigelow's lithotrite will answer for this purpose.

Dr. Gouley has devised this instrument for the same object (Fig. 7). This (Fig. 8) which I hold in my hand, I have frequently used. If the stone be very large and hard, I think it is the better instrument, as the screw can be used. The larger fragments may be removed with the forceps. This scoop (Fig. 9) which I show you, is very useful in removing the smaller fragments. I have also often used it in removing small calculi, by passing my finger along its side and pushing the stone into the scoop, holding it there until it is pulled from the bladder.

So much for the instruments we use in this operation—the staff, the knife, the director, the extracting forceps, the scoop, and the crusher.

A few words on the advantages of the median operation over the lateral and the bilateral:

*First.*—The ease with which the bladder is reached.

*Second.*—The incision being made in the median line, no muscles are cut, and no vessels of importance wounded.

*Third.*—The neck of the bladder and the prostate gland are uninjured.

*Fourth.*—There is no danger of wounding the rectum.

*Fifth.*—The patient usually retains control over his bladder after the operation—a matter of considerable importance, inasmuch as it adds to the comfort of the patient.

After the operation for lateral lithotomy, you know, where the neck of the bladder is incised, the urine runs from the bladder for a long time, the patient having no control whatever over it.

With the median operation, in nearly all my cases the patients have had complete control over the bladder imme-

diately after the operation, so that I always expect them to do as the little boy did, on whom some of the gentlemen present saw me operate at my clinic in the New York University the other day.

About six hours after the operation he wanted to pass water, and did so, all the urine passing naturally through the urethra, owing to the swelling about the wound. The next time the patient passed water, part of it came through the urethra, but most of it came through the cut. From that time, for some days, all the water passed by the cut; but as soon as the wound began to heal, part passed by the cut and part by the urethra, until the wound completely closed, and thereafter the urine passed entirely by the natural channel; but during all this period the patient held his water from two to four hours at a time, and would call for the vessel in which to pass it.

Anatomically considered, this is certainly, I think, the best method, because there is less injury done to the parts than by the lateral or bilateral operation. In both of these methods the prostate gland is incised, and it is still an open question, as to the extent of damage done to the virility of the patient. In this respect, the injury done to the gland by the bilateral method will, of course, be greater. In the lateral operation the prostate is cut on one side; in the bilateral on both sides; so that if there is any harm done to the virile powers of the patient, it seems to me to be greater in the bilateral than in the lateral operation. It would be extremely interesting, if we could follow up our cases, and ascertain the result as regards the injury done to this power in the different classes of operations. I think in the median operation but little damage is done; none at all, in fact, except in attempting to remove large stones intact, when the neck of the bladder may be torn. If you perform the operation properly, no damage is done to those parts which enter into the generative process.

I might speak of another operation called Dolbeau's operation, or perineal lithotrity, and which was brought to the notice of the profession by Professor Dolbeau, of Paris, in 1862, eight years after Mr. Allarton had revived the modified median operation. It is simply the method of Mr. Allarton, except that M. Dolbeau, instead of dilating the neck of the bladder with the finger, uses an instrument for that purpose. Mr. Allarton at first used his finger, after that he tried dilators, but in his last work, "Lithotomy Simplified," a larger work than the pamphlet I alluded to previously, he states that he knows of no better dilator than the finger, and no other dilator is necessary. M. Dolbeau claims that the neck of the bladder can be dilated with safety up to a diameter of twenty millimetres (thirteen sixteenths of an inch) and for this purpose he uses an instrument, which is called Dolbeau's dilator. It is passed in along the groove of the staff until the point enters the bladder, and then by a screw, the blades spread and dilate to the desired extent. It is called Dolbeau's operation, simply because he does that. He then removes the stone if it is small enough to come through; if not, he crushes. Probably he would crush many stones that Mr. Allarton would remove whole, but the operations are essentially the same. It might as well be stated that M. Dolbeau does not even mention Mr. Allarton's name in the work he has written on this subject.

Up to the present time I have performed the operation thirty-two times with but two deaths. The ages of the patients were as follows :

Under 5 years, 13 cases.					
Between 5 and 15	"	10	"		
" 35	"	40	"	4	"
" 40	"	50	"	1	"
" 50	"	60	"	2	"
" 60	"	70	"	2	"



The youngest two were nineteen and twenty months of age, the oldest sixty-five and sixty-seven years. All of these were cases in which I thought that lithotrity was not admissible. The fatal cases were patients fifty-six and sixty-five years of age respectively. The cause of death in the patient fifty-six years of age was peculiar. The patient was sick with typhoid symptoms. His physician finding him suffering from some difficulty about the bladder, sent for me; I examined and found a stone, but refused to operate, as it seemed to me the patient was in such a condition, that no operation was justifiable, but a few days after a consultation was called, and the patient in his weak condition insisted on

having the stone removed. After talking over the matter, it was thought advisable to give the patient the benefit of the operation, and I performed it. On cutting down I came to this very peculiar stone (Fig. 10). It is flat and triangular in shape as you see. The corners are rounded, and one of them presented at the neck of



FIG. 10.

the bladder, and seemed to be a stone of moderate size. I was unable, on account of the depth of the perineum, the patient being a large man, to get my finger well into the bladder. I seized it with my forceps, and from the grasp judged it to be small. It came out without using much force. I then found that I had seized it by its smallest part, and that its real size was large, the greatest diameter being 49 millimetres ( $1\frac{1}{2}$  inch). The patient felt relieved of his bladder symptoms, but died on the third

day after the operation from typhoid symptoms. On post-mortem examination, I found the neck of the bladder considerably lacerated, with more or less extravasated blood in the vicinity, although not as much as I expected, considering the size of the stone and the rigidity of the opening.

The other case of death was a man 65 years of age, who had suffered from stone for many years. Lithotrity had been tried, but as it caused great pain the patient would not allow the operation to be repeated. He then put himself under the charge of some one in New York, who promised to dissolve the stone by internal remedies. Finally he came to me. I examined the urine, found a certain amount of albumen in it, but no casts, and I operated upon the patient. I found two small calculi. This patient had no bad symptoms from the operation, except some slight vesical tenesmus, which occurred during the first twenty-four hours, until the third day, when he complained of a severe pain at the right sacro-iliac synchondrasis. In a few hours after the pain commenced a large ecchymotic spot appeared in this situation and was incised; there seemed to be more or less gas in the cellular tissue. The pain was so severe that several hypodermic injections of morphine were administered in various parts of the body; these were always followed in a short time by hemorrhagic spots, as large as my hand; the patient sank, became comatose, and died on the evening of the third day. His body was put on ice immediately, as it was very warm weather. The next morning at seven o'clock I went to make a post mortem examination, and found the body in the most advanced stage of decomposition that I had ever seen occur in the same space of time; it was green and bloated, so that it was impracticable to make the examination.

In these operations I have had no troublesome hemor-

rhage whatever. In two cases I was annoyed from two to four hours after the operation by the patient having severe vesical tenesmus. This was alleviated in one case, by passing a soft catheter through the wound and keeping it in, for a few hours; the other case was relieved by the patient making a terrible strain and passing a large clot of blood. These are the only cases in which this symptom appeared. In one case, to which I alluded in the early part of my lecture, the operation was followed by stricture; in that case I had difficulty in entering the bladder, and the urethra was torn partially across. This was relieved by external urethrotomy, bougies and sounds were passed, and the patient got entirely well. The child died two years afterward of scarlet fever, so I cannot tell whether that stricture would have returned, as traumatic strictures usually do.

In only one case of the thirty-two, have I had a perineal fistula remain. In this case the boy soon after the operation had an attack of scarlet fever. For some reason, after he got over that, the wound remained open and made no attempt to heal. It seemed to be almost as large as it was at the time of the operation. Gradually he improved sufficiently to leave the hospital. The fistula remained open for nearly a year and a half. It however gradually closed of its own accord completely and thoroughly. You know a fistula is not unusual after the operation for lateral lithotomy, but among all my cases by the median operation this was the only one that occurred.

As regards the size of the stones, the one I showed you a moment ago is the largest in diameter that I have removed whole. In nearly all the other cases where the stone was of large size I crushed it before removal. Here is a large stone which was seized in its smallest diameter, 37 millimetres ( $1\frac{1}{2}$  in.), and brought through the dilated neck of the bladder without the slightest trouble, leaving



no bad symptoms. This is probably the largest stone I have removed, though not the largest in diameter (Fig. 11).

In form, it looks like a meerschaum pipe. It is 87 millimetres ( $3\frac{1}{2}$  inches) in length, and the diameter which passed through the wound

is 37 millimetres ( $1\frac{1}{2}$  in.).

It is a phosphatic calculus.

A large part of the longer end of the stone occupied the prostatic and membranous portions of the urethra. The patient, of course, had no control over his bladder, his urine dribbling from him constantly. The stone could be felt externally by pressing against the perineum.

I was not able at the time of the operation to pass



FIG. 11.

my staff fully into the bladder, and had to have it held at an angle. I could easily have cut on the gripe and removed the stone. I did not consider it necessary to crush it before attempting its removal, because a large part was protruding from the bladder. On seizing it with the forceps, it came out with but little traction.

Strange to say, the man had been within two months before he came to me, to three physicians in the city of New York, two of whom passed in an instrument and did not find the stone, though they could have felt it from the outside without any trouble. This patient recovered, with complete control over the bladder. Of course for some time after, the water dribbled away, as it would do in cases where lateral section had been made.

I will show another specimen of some interest, an oxalate of lime calculus, which came from the boy who had the fistula remain for some time. It is quite rough. One feature about it is somewhat curious: when I removed the stone I was much surprised to find it so rough, as he had had very slight symptoms of stone. An English surgeon, who had been stationed in India, told me at the time of the operation, that it was not unusual to remove stones of this character in India, and that it was found that rough stones frequently gave less trouble to the patient than smooth ones. When this stone was brought out, it was coated with a thick layer of tenacious mucus, and consequently was smooth while in the bladder, and less irritating than a smooth stone to which no mucus would adhere. He stated that the fact had been noticed there; I have not seen it alluded to in any authority or work on the subject.



FIG. 12.

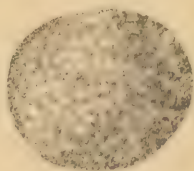


FIG. 13.

Here is a stone which I removed from a child nineteen months old, 24 millimetres ( $1\frac{1}{4}$  in.) in diameter (Fig. 12). Here is another from a child of twenty months, 20 millimetres ( $3\frac{1}{4}$  in.) in diameter (Fig. 13). Two others, from a boy ten years old, have an interesting history. The mother called at my office about eight o'clock in the evening, and told me the child had difficulty in holding its water, and some trouble in passing it. I at once suspected stone, put the little fellow under an anæsthetic, laid him on

my table, and found a calculus. I told the mother there was a stone in the bladder, and it was best to let me operate at once. She consented. I cut and removed these two calculi. The child went home, and it is the only case I have had where the internal portion of the wound healed by first intention. This child never passed a drop of water through the wound after the operation. Two days after, the child was up and running round the room, passing all his water through the urethra, and the external wound almost entirely healed.

I have here the fragments of two large calculi, which are somewhat interesting. These stones were dovetailed together, and the patient told me, as he moved around, he could feel them move upon each other. On inspection after removal, I found two facets, polished like ivory, where the stones came together. In another case the median operation was performed and the stone crushed; no bad symptoms occurred until six or eight weeks after, when the patient gave evidence of another stone. I again performed the operation by reopening the wound and took out a soft phosphatic calculus. The bladder after the first operation was thoroughly explored with the finger, not only by myself but by other surgeons present, and no fragments detected; still within a few weeks from that time I removed a stone which was more than an inch in diameter. The fragments are here. I believe that a piece had been left behind in some part of the bladder, because it would have been impossible for a stone of this size to have formed in so short a time.

Shortly after that, in 1874, I operated on a little boy, about eight or ten years of age, crushed a stone and removed the fragments. After I got through with the operation, I allowed two distinguished surgeons who were present to examine the bladder with their fingers, and they were

satisfied that no fragments remained behind. For some reason, after they had left the house, I had occasion to put my finger in the bladder again, and I found a large fragment up behind the pubes which had entirely escaped our examination, so that from that time I have always been careful in making an examination of the bladder with my finger, to pass it directly upwards behind the pubes, to see if any fragments remained: it is a place where they frequently become lodged. During the examination for stone, you frequently miss it because it is in that position. At the operation in the University two weeks ago, I had an instance of this: my incision in the membranous portion was not made large enough, and in attempting to introduce my finger, I found it so small that I would tear the urethra if I attempted to push my finger into the bladder, so I simply introduced the forceps which went in readily along the groove of the staff. I have frequently done this. With children I do not always put my finger into the bladder, but as soon as I find the director is in, I pass in the forceps hoping to seize the stone, and dilate as I withdraw. In this case, I felt around for ten or fifteen minutes but could not find the stone, and I began to feel afraid I was not in the bladder; I grew nervous over it, but I took this pair of curved polypus forceps, passed it in, and bending it up in this way I found the stone right behind the pubes, brought it down, seized and withdrew it.

There are a good many stories connected with these other specimens, but I will not detain you with them. I wish to speak of an accident I once witnessed, and which, I think, is worth remembering. A young physician who had frequently assisted in this operation, and had seen it done many times, had a case come under his care and decided to operate. I stood by and held the staff. He cut down, and passed the director into the bladder. In passing his



finger in as is usual to dilate the neck of the bladder, he pushed on, as I noticed, very rapidly and very hard. After a few moments he said, "I cannot find the stone." I put my finger in and instantly said, "You are not in the bladder," I examined again, passed in the sound, examined again and again, and finally, I must confess I made up my mind he had entered the bladder, but no stone could be found. The next morning the patient passed water from the wound, but in the afternoon, peritonitis appeared and the patient died. I made a post-mortem, and found that the operator's finger had passed up between the bladder and the abdominal wall. The patient was a little child, only three years old, and the forcible pushing of the finger, had caused the urethra to give way. It was surprising what a cavity he made by working his finger around in that short time. The cavity was so marked that after examining it for some minutes I felt almost positive that it was the bladder, but there was one point about it which led me to have some suspicion; I could feel something pushing down upon my finger when the child breathed, and when I found that peritonitis had developed, I was satisfied that this was the fold of peritoneum where it passes from the bladder to the abdominal wall, and that the bladder had never been reached. The post-mortem showed the difficulty, and in the bladder was found the stone. That occurred six or eight years ago, and from that time I have been extremely careful in pushing my finger along the director into the bladder, especially if I do not feel that I have cut the urethra sufficiently. That is the reason why in the operation in the clinic two weeks ago, I did not force my finger into the bladder; I could feel the urethra was not cut enough, consequently I did what is best to do in such a case, passed in the forceps, seized the stone, and withdrew it. I do not know but that in

many cases with children the insertion of the forceps is just as well; the only advantage of the finger is, that if the stone is lodged anywhere you can feel it, and push it down in a position to be easily removed.

The best instrument to search for stone is Thompson's, because it has a short curve. A great many stones are sought for and not found because the surgeon uses an instrument with a very long curve, and as that passes upwards he sounds the upper portion of the bladder only, but is not able to get it around behind the prostate and feel the stone if there. The advantage in using this instrument is that you can turn it completely around, and if the calculus is lying behind the prostate, it can readily be felt. I will now close by demonstrating the operation upon the cadaver.





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